

Commentary

Locating Fibers in the Bowel Wall*

by Fred Pooley†

Our interest has centered mainly around the inhalation of asbestos fibers into the lungs, whence they must either be exhaled or settle out and be transported by various tissue mechanisms. The gastrointestinal tract, on the other hand, is an open-ended system, with particles entering at one end and leaving at the other. It is difficult to compare the two systems. Ingested particles, moreover, need not necessarily come into contact with the wall.

Both the lung and the gastrointestinal tract are designed to handle particulate material and move them around. Unless you overload the system you are unlikely to bring about accumulation and damage. We do not see disease in the lungs until a considerable amount of material has been accumulated; we would expect the same thing to hold for the gastrointestinal tract.

The gastrointestinal tract is a very difficult organ to study. The thickness of tissue presented to a potentially invading particle at any one point is small, as compared with the mass of lung. It is correspondingly very difficult to obtain tissue that actually has fibers in it at any one time. The few sections of gas-

trointestinal wall that we have examined in persons with industrial exposure to asbestos had very few fibers visible, although the lung was loaded.

We have under way animal experiments on ingested asbestos. They were being fed 100 mg/day for 6 months. They are just now coming up for sacrifice after 2 months free from asbestos feeding, so that the lumen will not contain asbestos. One of the first things we found with our animal experiments is that angulations in the wall can hold material up there for an appreciable period of time. The risk of contamination of one's specimen is serious. If we are looking for a small number of fibers, we are dealing with 10^{-12} g of material, and this is very much lower than what we look for with trace metals.

For locating fibers in the bowel wall we use a technique which does not require complete digestion of the tissue. The mucus on the wall may well hold material that might be later regarded as being within the specimen. We have not found any fibers with the optical microscope, and only 6 or 7 fibers in about half a dozen cases by electron microscopy.

*Editor's extract from transcript of presentation.

†University College, Cardiff, Wales.